A small swivel joint for infusion of free moving animals

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BRIEF COMMUNICATION

A Small Swivel Joint for Infusion of Free Moving Animals[1]

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STRUBBE, J. H. *A small swivel joint for infusion of free moving animals.* PHYSIOL. BEHAV. 12(2) 317–319, 1974.–The construction and application of a small, light, inexpensive swivel joint suitable for infusions of small laboratory animals is described. Commercially available tubes and needles are used in the construction of the swivel thus making it easy to prepare and essentially disposable. This swivel is especially useful in long- and short-term infusions of pharmaca and nutrients in the general circulation.

Swivel joint Systemic infusion

WHEN free moving animals are infused with liquids a swivel joint is required to prevent torsion of the infusion tubes. Several swivels were described already in the literature [1, 2, 4, 5] but most of them are relatively large and have too much frictional resistance for the small diameter tubes we use in our work. The swivel described by Weeks is commercially available but is relatively expensive. The swivel described here (see Figure) is adapted to the heart catheter of Steffens [3], and modified from a swivel of Thomas and Mayer [4].

(1) A ring of 1.5 mm of a 20 gauge needle is soldered onto a 24 gauge needle with tin. Care has to be taken on the following points: (a) Tin must not be spilled otherwise the teflon tube (see below) cannot move freely. (b) Filing tin solder from the 24 gauge needle is not permissible because of the risk of leakage of the swivel between needle and teflon. (c) The transition between the two needles must be rectangular, if it tapers even only slightly the teflon tube will climb on the 20 gauge ring.

(2) The outside of the 24 needle is greased with silicon grease and a piece of teflon tube is slipped over it.

(3) The polythene tube from the pump is pressed tightly on the 24 needle against the teflon. The teflon tube can turn around the needle now and cannot move out of the swivel.

(4) A tight fitting silicon tube is slipped over the teflon in such a way, that the 20 gauge ring can turn freely against the silicon tube.

(5) The tube to the infusion catheter is inserted in the silicon cuff.

(6) In the experiment a thin thread for attaching a counterbalancing weight is tied to the upper polythene tube just above the swivel.

(7) If necessary due to the nature of the experiment the tubing can be protected with a stainless steel coil.

With moderate pressures there will not be any leakage. During one year we used this swivel without leakage problems in extensive experiments in which systemic infusions of insulin and glucose were made to investigate the relation between these substances and food intake in rats. In general the swivel will be useful in all kinds of infusion experiments (intragastric, intravenous, intracerebral) but because of the small tube diameter the viscosity of the injected fluids must be low. The swivel is easy to prepare within a few minutes when gauge needles with rings are available. Frictional resistance of the swivel is minimal so that small diameter tubes can be used.

Manufacturers

Polythene tubing: Portex Limited England Cat. N. PP40 and PP55; silicon tubing: Rubber *Hilversum* The Netherlands; and teflon tubing: Becton, Dickinson and Co. U. S. A. Cat. N. 6441 thin wall.

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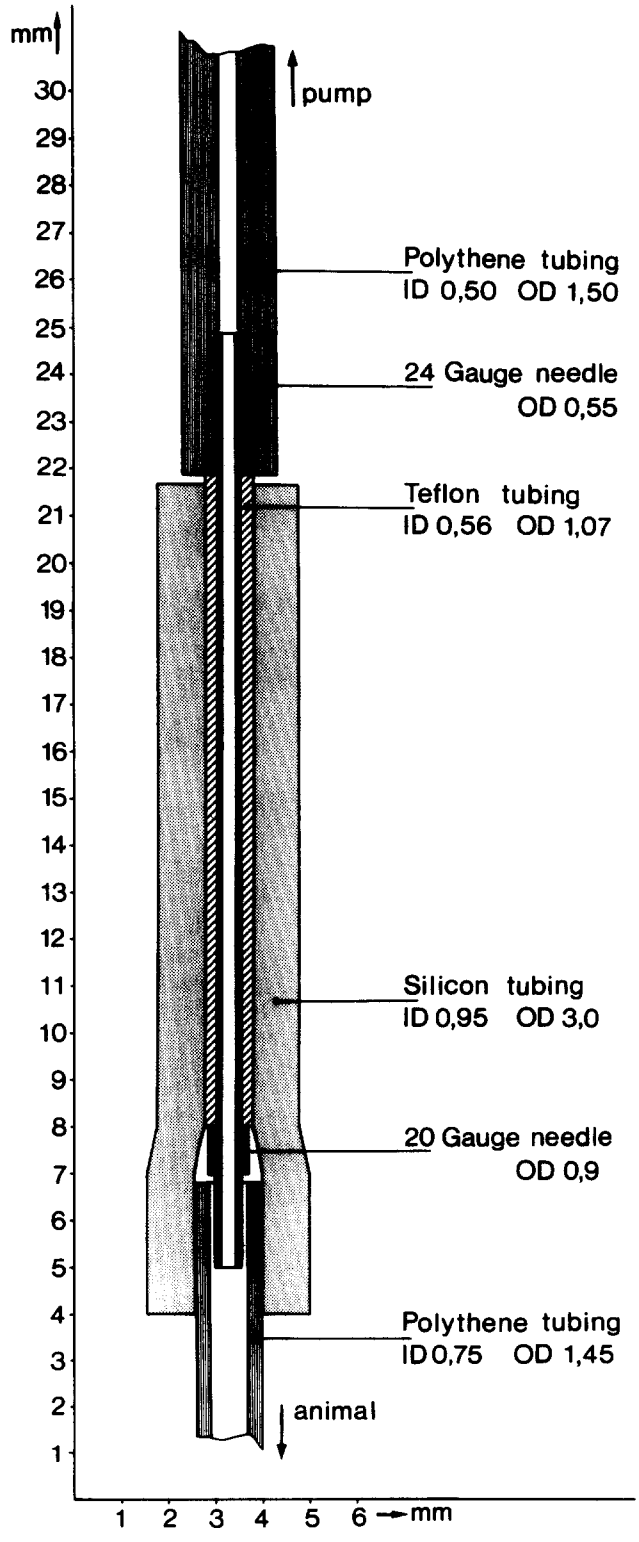

FIG. 1. Longitudinal section of the swivel joint. All measures in mm.

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